

## Maître Cabinotier retrograde armillary tourbillon

- A unique type of watch that takes up the two original complications of the Ref. 57260 superwatch
- Four patent applications
- A stunning and contemporary design
- With the Poinçon de Genève Geneva quality hallmark

In the wake of the most complicated watch ever made, the Ref. 57260 with 57 complications, Vacheron Constantin unveils the Maître Cabinotier retrograde armillary tourbillon model. This timepiece bearing the Hallmark of Geneva was produced by the three master watchmakers who created Ref. 57260, and they incorporated two of the complicated features of the superwatch: the armillary tourbillon and the double retrograde indication. Its contemporary styling opens the remarkable structure of the calibre 1990 movement to view. The high-precision manually wound movement is housed in a 45.7mm case in white gold. Four patent applications have been filed for this unique model.

### Inspired by the Reference 57260

On September 17, 2015, Vacheron Constantin unveiled a watch with 57 complications – the most complicated watch ever made. This mechanical wonder, devised by three master watchmakers from the company's Atelier Cabinotiers workshops, took eight years to develop and was presented to mark Vacheron Constantin's 260<sup>th</sup> anniversary. The one-off piece was made to a special commission, using the latest technology to preserve the traditional watchmaking principles certified by the Hallmark of Geneva. The research and skill mobilised to create the superwatch remained a source of inspiration as well as a development resource for its three watchmakers, who were at the same time working to highlight some of its complications separately.

The Maître Cabinotier retrograde armillary tourbillon model is the first born of this project. It's a remake of two of the Ref. 57260's complications, the double retrograde indications and the armillary tourbillon, in a contemporary guise. The retrograde function governs the hours and minutes while the tourbillon revolves on two axes and has a spherical balance-spring. The

movement coated with NAC (a special metal alloy) is also revealed through lateral windows in its imposing case. This timepiece forms part of the select Maître Cabinotier collection, which showcases Vacheron Constantin's horological achievements, customised work and overall excellence.

### **Double retrograde system**

The manually wound calibre 1990 movement developed and manufactured by Vacheron Constantin features retrograde hours and minutes indications with instant flyback. The double indications are as technically fascinating as they are visually mesmerising. The hands flick back to zero at such a speed that the special attention is needed to ensure a precise indication and such lightweight and resistant materials as the titanium used in the hands.

### **Armillary tourbillon**

The lighting reaction of the retrograde hands contrasts with the more stately pace of the armillary tourbillon with a spherical balance spring. The elegantly structured tourbillon operates as a sphere perpetually rotating on two axes under a sapphire crystal dome at 9 o'clock. It's called an armillary tourbillon because it is based on an armillary sphere like the one incorporated in an astronomic clock made by the French clockmaker, Antide Janvier, in the 18th century. The tourbillon is a visual evocation of the rings and hoops of the ancient model of the celestial sphere. The spherical balance spring, which was first developed by Jacques-Frédéric Houriet in 1814, is particularly rare in today's watches. The shape ensures the concentric development of the spring and consequently the isochronism of the balance wheel. The tourbillon carriage, made of lightweight aluminium alloy, incorporates Vacheron Constantin's Maltese Cross emblem, which forms up every 15 seconds as the tourbillon rotates. This ongoing spectacle may be admired every 30 seconds through a sapphire crystal opening on the side of the case.

### **High-precision movement**

As fascinating as it is for its action and construction, the armillary tourbillon achieves remarkable timekeeping precision. It is fitted with a new type of escapement, developed and made by Vacheron Constantin that has the escape wheel and lever in silicon with diamond pallet stones for resistance to wear and long life. The escapement, made as lightweight as possible by the use of high-tech materials, contributes significantly to the performance of this watch, which greatly exceeds the requirements of the Swiss Official Chronometer Testing Institute (COSC). This level of precision is all the more noteworthy considering the large amount of energy absorbed by the double retrograde indications.

### Contemporary styling and finish

Another feature that makes the Maître Cabinotier retrograde armillary tourbillon watch original is the modern styling applied to the architecture and finish of the movement. The calibre 1990 is electro-plated with an NAC treatment in a dark anthracite colour creating a mirror-polished effect. On the dial side the movement displays its modern architecture with sharply cut bridges tempered by a sunburst satin finish and Geneva stripes. The back presents a more conventional look, finished with Geneva stripes making an elegant counterpoint to the contemporary face of this unparalleled watch in the Vacheron Constantin product range. As an additional token of excellence, the painstaking work of chamfering all the edges took more than 130 hours. The indications are shown on two dials that partially cover the baseplate so as to reveal the outlines and contemporary finish of the movement. On the right, the retrograde minutes and hours hands describe a semicircle over a sunburst satin finish punctuated by applied white-gold hour markers and a black minutes scale. Placed symmetrically, the tourbillon carriage carries the seconds pointer around a scale on a silvered disc. The Poinçon de Genève hallmark is exceptionally also engraved on the dial side above the inscription "Armillary Tourbillon" to certify the supreme quality of this timepiece.

### Four patents are pending for the calibre 1990 inventive features

#### 1. The instantaneous retrograde system

The minutes cam alone determines when the hands for the minutes and the hours fly back. The retrograde action of both hands is thus synchronised at noon and at midnight.

N° 706 767

(54) Device governing the mechanism for a retrograde indication

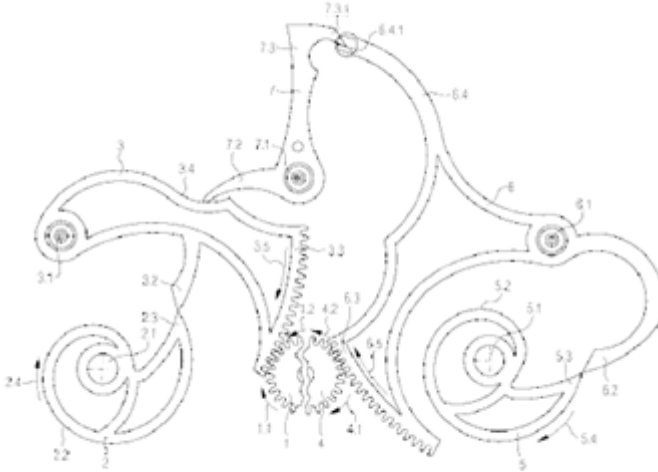
(57) This invention concerns the control mechanism for a retrograde indication meant for a horological movement. The device consists of a first cam (2) and a second cam (5) as well as a first rack (3) and a second rack (6), the first rack (3) being held against the first cam (2) and the second rack (6) held against the second cam (5). The first cam (2) is set so as to free the first rack (3) at a first predetermined time to allow the first rack (3) to rotate through a first defined arc; the second cam (5) is likewise set so as to free the second rack (6) at a second predetermined time, allowing the second rack (6) to travel through a second defined arc. The device includes a release mechanism (7) governed by the first rack (3) and acting upon the second rack (6) so that at the first predetermined time when the



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first cam (2) releases the first rack (3), the second rack (6) is released simultaneously. This invention also concerns a horological mechanism incorporating such a device.”



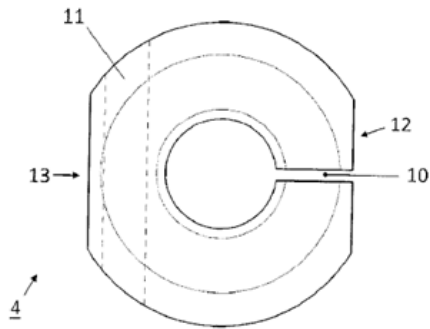
## 2. The collet

The collet fixing the spring to the balance staff is made in lightweight titanium to improve the isochronism of the balance. Titanium's weight and volume match those of the other materials in the regulating organ, making the collet ideal for use in a tourbillon.

N° 706 846

(54) Collet for a balance-and-spring regulating organ

(57) The invention is of a collet (4) for a balance-and-spring regulating organ to be fitted in a mechanical watch movement. The collet (4) is made to be set onto the balance staff of the regulating organ and hold the inside end of the balance-spring. The collet is wholly or in part made either of titanium or an alloy thereof or of aluminium or alloy thereof. The collet has flat planes (12, 13) on either side along its axis. The collet made thus has a lower weight than a conventional collet and can be beneficially mounted on the regulating organ in a tourbillon carriage.



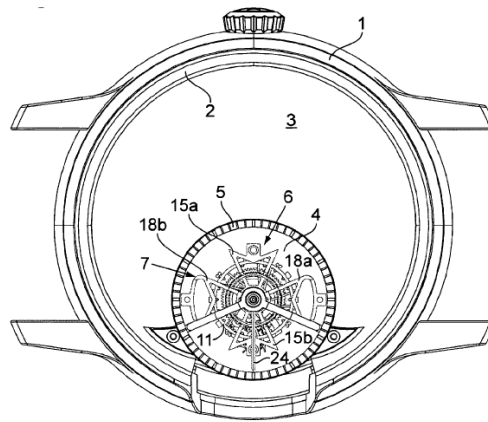
### 3. The multi-carriage tourbillon

The tourbillon is made up of two carriages, one inside the other. As they rotate they form a Maltese Cross every 15 seconds. The tourbillon has a Vacheron escapement and sprung balance. The escape wheel is made of silicon with a diamond-like coating, while the diamond pallet stones have a very low coefficient of friction.

N° 2 741 150

(54) Multi-carriage tourbillon, horological movement and timepiece comprising the multi-carriage tourbillon.

(57) The invention is of a timepiece comprising a multi-carriage tourbillon in an horological movement, the multi-carriage tourbillon consisting of an outside carriage (7) and an inside carriage (6) that pivots within the outside carriage (7). The outer carriage (7) has at least one distinctive part (18) and the inner carriage (6) also has at least one distinctive part. In at least one relative position of the inside carriage (6) and the outside carriage (7) one distinctive part of the outer carriage combines with a distinctive part (15) of the inner carriage to periodically form a particular shape visible from the outside of the timepiece.



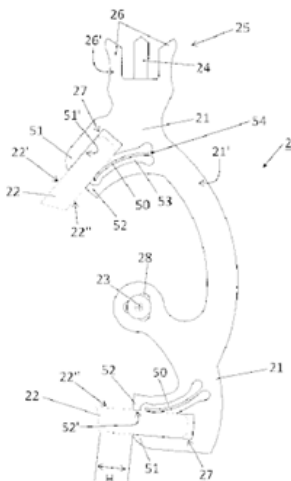
#### 4. The lever

The silicon lever can be fitted with movable pallet stones so that the watchmaker can adjust them as in a conventional pallet lever. The diamond coating of the lever makes it stronger and more resistant to wear, while the friction between the fork and impulse pin is markedly reduced.

N° de publication 706 756

(54) The lever for a horological escapement

(57) This invention involves a pallet lever (2) for an horological escapement consisting of a fork (25), two arms (21), each with a seating (27) for a pallet stone (22). The lever (2) also has a securing device on each of the two arms (21) consisting of an elastic structure (50) that is arranged to press against the pallet stone (22) when it is in its seating (27). The pallet stone (22) can thus be adjusted and fixed in a chosen position in its seating.





# VACHERON CONSTANTIN

GENÈVE, DEPUIS 1755

## TECHNICAL DATA

Maitre Cabinotier retrograde armillary tourbillon

### Reference

91990/000G-9882

Hallmark of Geneva certified timepiece

### Caliber

1990

Developed and manufactured by Vacheron Constantin

Mechanical, manual-winding

35 mm (1 3/4") diameter, 10 mm thick

Approximately 68 hours of power reserve

2.5 Hz (18,000 vibrations/hour)

299 components

45 jewels

NAC treatment

### Indications

Instantaneous retrograde hours

Instantaneous retrograde minutes

Small seconds at 9 o'clock on tourbillon carriage

2-axis armillary tourbillon

### Case

18K white gold

45.7 mm diameter, 20.06 mm thick

Transparent sapphire crystal caseback

Water-resistance tested at a pressure of 3 bar (approx. 30 meters)

### Dials

**Hours/minutes dial:** silver-colored, sun satin-finished, 18K white gold applied hour-markers, painted minute-track

**Seconds dial:** silver-colored, sun satin-finished, painted minute track

**Hands:** titanium

### Strap

Black Mississipiensis alligator leather with alligator leather inner shell, hand-stitched, saddle-finish, large square scales

### Clasp

18K white gold triple-blade folding clasp

Polished half Maltese cross-shaped

Unique timepiece

« Pièce Unique » engraved on caseback